AVIAN INFLUENZA SURVEILLANCE UPDATE

Iowa Dept. of Natural Resources
Guy Zenner, Waterfowl Research Biologist
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INTRODUCTION

The goal of the National and Mississippi Flyway Avian Influenza Surveillance Strategies was early detection of the Asian HP H5N1 avian influenza virus (HP H5N1 AIV) in wild migratory birds -not to assess its prevalence over time, monitor its rate of movement, or investigate the ecology of the disease.

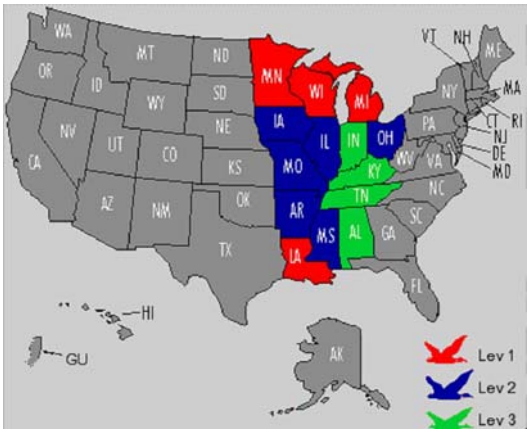
The plan identified priority species for surveillance in the Mississippi Flyway, recommended a suite of sampling approaches for an effective HP H5N1 AIV detection system in migratory birds, recommended procedures to integrate detection efforts with national programs, and described planning efforts to maintain an effective detection system in the Flyway.

Flyway priorities for sampling migratory birds were based on species that had been identified as having the highest potential for exposure to the HP H5N1 AIV in the national plan. For the most part, these were species that migrated from Alaska or were closely associated with birds that migrated from Alaska. Additionally, information on intermixing of species on waterfowl concentration areas during fall and winter, as well as accessibility, were considered in developing a list of primary and secondary species to be sampled. Sample goals for primary and secondary species were developed for regions by examining the distribution of recoveries from ducks banded in Alaska and the magnitude of the harvest by region.

Primary waterfowl species in the Mississippi Flyway included: northern pintail, mallard, wigeon, green-winged teal, northern shoveler, lesser scaup, and greater scaup. Secondary species in the Flyway included: blue-winged teal, gadwall, white-fronted geese, snow geese, and Canada geese.

Primary shorebird species in the Mississippi Flyway included: pectoral sandpiper, dunlin, long-billed dowitcher, greater yellowlegs, lesser yellowlegs, and ruddy turnstones.

Based on waterfowl use during fall and winter, as well as annual hunter harvests, states were identified as high (Lev 1), moderate (Lev 2), or low (Lev 3) surveillance regions. Based on detection probabilities developed for the national plan, high, moderate and low surveillance states were assigned sample goals of 2,000, 1,500 and 1,000 birds, respectively, in 2006. The responsibility for collecting samples was split between the state natural resource agency and USDA APHIS-Wildlife Services. In 2007, sample goals for high, moderate, and low surveillance regions were reduced to 1,500, 1,000, and 750 birds, respectively.



SURVEILLANCE GOALS

In August, 2006, the IA DNR signed an agreement with APHIS-WS to assist with the collection of 1,500 samples from waterfowl and shorebirds for the AI surveillance program. The IA DNR agreed to collect 750 cloacal samples from hunter-shot and captured ducks during September and October (Table 1). APHIS-WS staff planned to collect 500 cloacal samples from hunter-shot ducks and 250 cloacal samples from captured shorebirds as well as 1000 environmental samples, i.e., fecal samples from ducks and geese, during September-November 2006.

Table 1: Species specific goals for sampling live and dead birds for AI in Iowa during fall 2006.

	Pintail	BWT[1]	Mallard	GWT[2]	Shoveler	Gadwall	Wigeon	Shorebirds	Total
IA DNR	80	180	180	180	45	45	40	0	750
APHIS-WS	80	120	120	80	30	30	40	250	750
Total	160	300	300	260	75	75	80	250	1500

[1]Blue-winged teal [2]Green-winged teal

In 2007, the sample goals for high (Lev 1), moderate (Lev 2), or low (Lev 3) surveillance regions in the Mississippi Flyway were reduced to 1,500, 1,000, and 750 birds, respectively. In July 2007, the IA DNR signed an agreement with APHIS-WS to assist with the collection of 1,000 samples from waterfowl for the AI surveillance program. The IA DNR agreed to collect 500 cloacal and oropharyngeal (part of the throat located below the soft palate and above the larynx) samples from hunter-shot and captured ducks during September and October (Table 2). APHIS-WS staff planned to collect 500 cloacal and oropharyngeal samples from hunter-shot ducks as well as 600 environmental samples, i.e., fecal samples from ducks and geese, during September – December 2007 and March-April 2008. Additionally, IA DNR staff monitored around 60 waterfowl management areas and refuges for dead and dying waterfowl on a weekly basis from the second week of September, 2007, through the first week of January, 2008.

Table 2: Species specific goals for sampling live and dead birds for AI in Iowa during fall 2007.

	BWT[1]	Mallard	GWT[2]	Pintail/Shoveler/Gadwall/Wigeon	Total
IA DNR	100	100	100	200	500
APHIS-WS	100	100	100	200	500
Total	200	200	200	400	1000

[1]Blue-winged teal [2]Green-winged teal

In 2008, the sample goals for high (Lev 1), moderate (Lev 2), or low (Lev 3) surveillance regions in the Mississippi Flyway are 1,800, 1,200, and 1,000 birds, respectively. In July 2008, the IA DNR signed an agreement with APHIS-WS to assist with the collection of 1,200 samples from waterfowl for the AI surveillance program. The IA DNR agreed to collect 600 cloacal and oropharyngeal (part of the throat located below the soft palate and above the larynx) samples from hunter-shot and captured ducks during September and October (Table 3). APHIS-WS staff plan to collect 600 cloacal and oropharyngeal samples from hunter-shot ducks as well as 600 environmental samples, i.e., fecal samples from ducks and geese, during September –

December 2008 and March-April 2009. Additionally, IA DNR staff will monitor around 60 waterfowl management areas and refuges for dead and dying waterfowl on a weekly basis from the second week of September, 2008, through the first week of January, 2009.

Table 3: Species specific goals for sampling live and dead birds for AI in Iowa during fall 2008.

	BWT[1]	Mallard	GWT[2]	Pintail/Shoveler/Gadwall/Wigeon	Total
IA DNR	100	100	100	300	600
APHIS-WS	100	100	100	300	600
Total	200	200	200	600	1200

[1]Blue-winged teal [2]Green-winged teal

RESULTS (2006 & 2007 Sampling Periods)

2006

In September 2006, APHIS-WS staff collected cloacal samples from 128 shorebirds captured in Kossuth and Marion Counties. IA DNR staff (21 wildlife biologists) and APHIS-WS staff (4) collected cloacal samples from hunter-shot birds in 20 counties on the two opening weekends of the duck season (Sept. 23-24 in both north and south zones, Oct. 14-16 in the north zone, Oct. 21-22 in the south zone) (Table 4) (Fig. 1). APHIS-WS staff collected a total of 1002 fecal samples at 6 locations in Iowa: Rice Lake Wildlife Management Area (WMA), Hawkeye WMA (a.k.a. Coralville Reservoir), Red Rock Reservoir, Green Island WMA, Riverton WMA and Lake Odessa WMA/Louisa NWR. All samples were delivered to Iowa State University Veterinary Diagnostic Lab for initial testing. Samples were pooled and any pooled samples testing positive for AI viruses were sent to the National Veterinarian Services Laboratory in Ames, IA, for virus subtype identification. **No cloacal or fecal samples tested positive for the HP H5N1 AIV.** Seven hunter-shot ducks tested positive for other avian influenza viruses (Table 5).

Table 4: Hunter-shot ducks and captured shorebirds sampled for AI in Iowa during fall 2006.

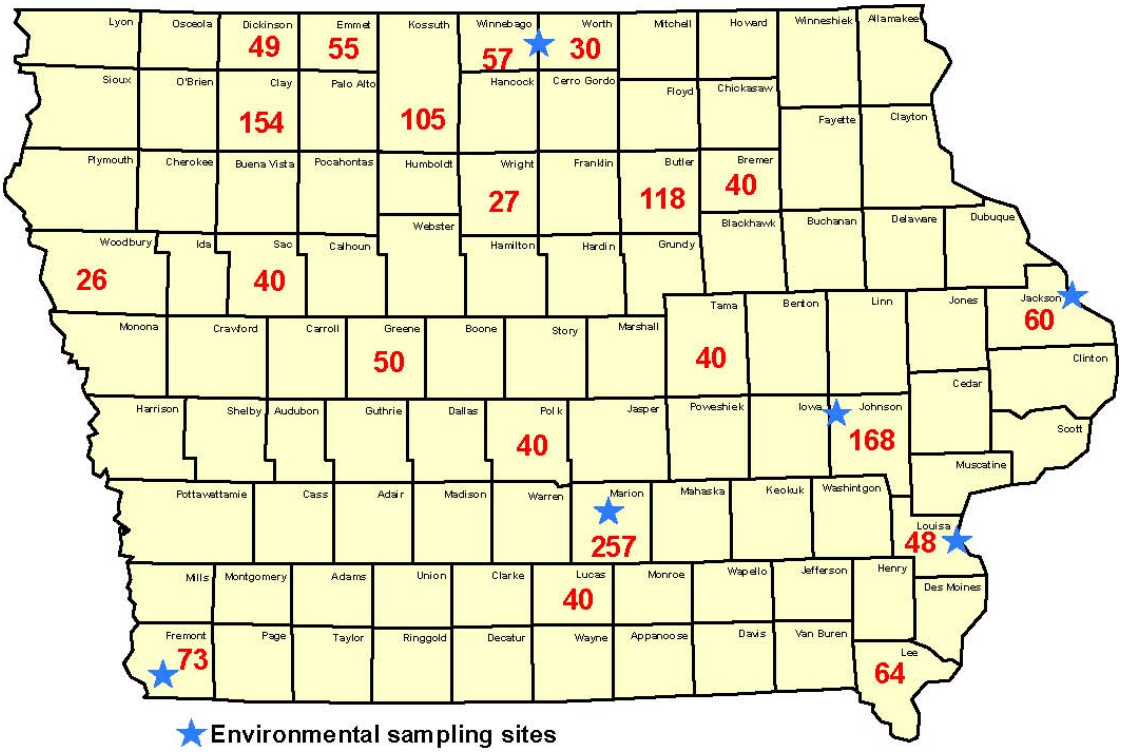
	Pintail	BWT[1]	Mallard	GWT[2]	Shoveler	Gadwall	Wigeon	Shorebirds	Total
IA DNR	78	178	139	201	55	62	82	0	795
APHIS-WS	33	214	77	159	23	89	23	128	746
Total	111	392	216	360	78	151	105	128	1541

[1]Blue-winged teal [2]Green-winged teal

Table 5: AI virus subtypes and species of duck in which they were found during fall 2006.

Subtype	Species	Sex	County	Date
H5N5	Green-winged teal	Male	Worth	10/14/2006
H4N6	Mallard	Female	Jackson	10/14/2006
H3N2	Mallard	Female	Jackson	10/14/2006
H5N2 (LPAI)	Pintail	Female	Polk	10/21/2006
H5N2 (LPAI)	Wigeon	Female	Louisa	10/21/2006
H5N2 (LPAI)	Green-winged teal	Male	Marion	10/21/2006
H6N1	Wigeon	Female	Louisa	10/21/2006

Figure 1: Numbers of hunter-shot ducks and live shorebirds sampled by county in 2006



2007

IA DNR staff (18 wildlife biologists) and APHIS-WS staff (4) collected samples from hunter-shot birds in 20 counties on the two opening weekends of the duck season (Sept. 22-23 in both north and south zones, Oct. 13-14 in the north zone, Oct. 20-21 in the south zone) (Table 6) (Fig. 2). An oropharyngeal (part of the throat located below the soft palate and above the larynx) and a cloacal swab were collected and placed into a single tube for each hunter-shot duck that was sampled. Diagnostic testing analyzed the swabs as a single sample. APHIS-WS staff collected 600 fecal samples at 8 locations in Iowa. All samples were delivered to Iowa State University Veterinary Diagnostic Lab where H5 and H7 specific RT-PCR assays were run on each sample

within 24 hours. **No cloacal/oropharyngeal or fecal samples tested positive for the HP H5N1 AIV.** Four of the 1017 hunter-shot ducks sampled for avian influenza tested positive for the H5 virus subtype (2 mallards – Emmet and Lucas Counties, 1 green-winged teal – Emmet County, 1 pintail – Greene County), but none tested positive for the N1 subtype. Testing was not conducted to identify other avian influenza subtypes. No dead or dying waterfowl, other than hunter-shot birds, were noted on weekly observations of waterfowl concentration areas during September-December, 2007.

Table 6: Hunter-shot ducks sampled for AI in Iowa during fall 2007

	BWT[1]	Mallard	GWT[2]	Pintail/Shoveler/Gadwall/Wideon	Redhead	Total
IA DNR	107	111	119	193	1	531
APHIS-WS	132	108	105	141		486
Total	239	219	224	334	1	1017

[1]Blue-winged teal [2]Green-winged teal

Figure 2: Numbers of hunter-shot ducks sampled by county in 2007